UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/648,525	08/26/2000	Michael A. Davis	CC-0273	6438

4955 7590 06/02/2003

WARE FRESSOLA VAN DER SLUYS &
ADOLPHSON, LLP
BRADFORD GREEN BUILDING 5
755 MAIN STREET, P O BOX 224
MONROE, CT 06468

EXAMINER	
AMARI, ALESSANDRO V	
ART UNIT	PAPER NUMBER
2872	

DATE MAILED: 06/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/648,525	DAVIS ET AL.
	Examin r	Art Unit
	Alessandro V. Amari	2872

-- The MAILING DATE of this communication appears on th cov r sheet with the correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 January 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37,39,40,42-47,49-54,56,58-68 and 70* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-37,39,40,42-47,49-54,56,58-68 and 70* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 31 January 2003 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 22-31, 39, 40, 42 and 70 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 22, lines 11-12, the phrase "the second waveguide being optically connected to the second waveguide" is indefinite because it is unclear which elements are being connected. Furthermore, the phrase "the second optical waveguide" lacks proper antecedent basis. The dependent claims inherit the deficiencies of claim 22.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-6, 8, 9, 11, 12, 15, 28, 32-34, 36, 43, 44, 45, 47, 58-62, 64, and 66-68 are rejected under 35 U.S.C. 102(b) as being anticipated by Li U.S. Patent 5,841,918.

In regard to claims 1 and 32, Li discloses (see Figure 1) a tunable optical filter or a method for selectively filtering an optical wavelength band from an input light comprising: providing a first optical element including a first reflective element (14) for receiving light and reflecting a first wavelength band of the light centered at a first reflection wavelength, the first reflective element characterized by a first reflective filter function as described in column 3, lines 45-54; and providing a second optical element, optically connected to the first optical element to receive the reflected first wavelength band of the light, including a second reflective element (16) for reflecting a second wavelength band of the light centered at a second reflection wavelength, the second reflective element characterized by a second reflective filter function whereby the shape of the first reflective filter function is different than the shape of the second reflective filter function as shown in Figures 2a and 2b; and the first wavelength band and the second wavelength band overlap spectrally as shown in Figures 2a and 2b and as described in column 4, lines 1-13.

Regarding claim 2, Li discloses that one of the first and second optical elements is tunable to change the corresponding first or second reflection wavelength as described in column 3, lines 58-67 and column 4, lines 1-18.

Regarding claim 3, Li discloses that both of the first and second optical elements is tunable to change each of the first and second reflection wavelengths as described in column 3, lines 58-67 and column 4, lines 1-18.

Regarding claim 4, Li discloses (see Figure 1) an optical directing device (12) optically connected to the first and second optical elements; the optical directing device directing the light to the first reflective element, directing the first wavelength band reflected from the first reflective element to the second reflective element, and directing the second wavelength band reflected from the second reflective element to the output port of the optical directing device as shown in Figure 1 and as described in column 3, lines 41-59.

Regarding claim 5, Li discloses that the optical directing device comprises at least one circulator as described in column 3, line 16.

Regarding claim 6, Li discloses (see Figure 6) that the circulator receives the light at a first port of the circulator, directs the light to the first reflective element through a second port of the circulator, receives the first wavelength band at the second port, directs the first wavelength band to the second reflective element through a third port of the circulator, receives the second wavelength band at the third port, and directs the second wavelength band to a fourth port of the circulator as described in column5, lines 40-61.

Regarding claims 8, Li discloses that the first reflection wavelength and the second reflection wavelength are substantially aligned to reflect a portion of the aligned wavelength bands to an output port as described in column 4, lines 1-18.

Regarding claim 9, Li discloses that one of the first and second reflective filter functions comprises one of a Gaussian, rectangular and ramp shape as shown in Figure 2a, 2b.

Regarding claim 11 and 36, Li discloses that the first reflection wavelength is offset a predetermined spacing from the second reflection wavelength or wherein tuning one of the first and second reflective elements comprises offsetting a first reflection wavelength and a second reflection wavelength by a predetermined spacing as shown in Figures 2a-2c and as described in column 4, lines 1-13.

Regarding claims 12 and 45, Li discloses that at least one of the first and second optical elements have an outer cladding and an inner core disposed therein, wherein the at least one of the first and second reflective element comprises a grating disposed in a longitudinal section of the inner core as described in column 3, lines 16-18. Although the prior art does not specifically disclose the claimed outer cladding, inner core with the grating disposed in a longitudinal section of the inner core, this feature is seen to be an inherent teaching of that device since the waveguide or fiber Bragg grating is disclosed and it is apparent that the grating must have a core and cladding and gratings are written in a longitudinal section of cores.

Regarding claim 15, Li discloses that at least one of the first and second optical elements is an optical fiber as described in column 3, lines 16-18.

Regarding claim 28, Li teaches that the first and second reflection wavelengths are substantially aligned as described in column 4, lines 1-18.

Regarding claim 33, Li discloses that tuning one of the first and second reflective elements includes compressing the one of the first and second optical elements as described in column 3, lines 19-24.

Regarding claim 34, Li discloses that tuning one of the first and second reflective elements comprises substantially aligning a first reflection wavelength and the second reflection wavelength as described in column 4, lines 1-18.

Regarding claim 43, Li discloses tuning the other one of the first and second reflective elements to overlap spectrally the first wavelength band and the second wavelength band as shown in Figure 2c.

Regarding claim 44, Li discloses that one of the first and second reflective filter functions comprises one of a Gaussian, rectangular and ramp shape as shown in Figures 2a and 2b.

Regarding claim 47, Li discloses that at least one of the first and second optical elements is an optical fiber as described in column 3, lines 14-18.

In regard to claim 58, Li discloses (see Figure 1) an optical filter comprising: a first optical waveguide including a first reflective element (14) for receiving light and reflecting a first wavelength band of the light centered at a first reflection wavelength as shown in Figure 2a, the first reflective element characterized by a first reflective filter function as described in column 3, lines 45-54; and a second optical waveguide, optically connected to the first optical waveguide to receive the reflected first wavelength band of the light, including a second reflective element (16) for reflecting a second wavelength band of the light centered at a second reflection wavelength, the

second reflective element characterized by a second reflective filter function as described in column 3, lines 58-67; whereby the first reflection wavelength and the second reflection wavelength are substantially aligned as shown in Figure 2c.

Regarding claim 59, Li discloses that one of the first and second optical waveguides is tunable to change the corresponding first or second reflection wavelength as described in column 3, lines 58-67 and column 4, lines 1-18.

Regarding claim 60, Li discloses that both of the first and second optical waveguides is tunable to change each of the respective first and second reflection wavelengths as described in column 3, lines 58-67 and column 4, lines 1-18.

Regarding claim 61, Li discloses an optical directing device (12) optically coupled to the first and second optical waveguides; the optical directing device directing the light to the first reflective element, directing the first wavelength band reflected from the first reflective element to the second reflective element, as shown in Figure 1 and as described in column 3, lines 41-59.

Regarding claim 62, Li discloses that one of the first and second filter functions comprises one of a Gaussian, rectangular and ramp shape as shown in Figures 2a and 2b.

Regarding claim 64, Li teaches that at least one of the first and second reflective elements includes a Bragg grating as described in column 3, lines 14-18.

Regarding claim 66, Li teaches that at least one of the first and second optical waveguides is an optical fiber as described in column 3, lines 14-18.

Regarding claim 67, Li discloses a compression device that axially compresses at least one of the first and second tunable optical waveguides, wherein at least one of the respective first and second reflective elements is disposed along an axial direction of the respective first and second optical waveguides as described in column 3, lines 19-40.

Regarding claim 68, Li discloses that the shape of the first reflective filter function is different than the shape of the second reflective filter function as described in column 3, lines 45-67 and as shown in Figures 2a and 2b.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent 5,841,918 in view of Kringlebotn et al. U.S. Patent 6,097,487.

Regarding claim 7, Li teaches the invention as set forth above but does not teach that said optical directing device comprises an optical coupler. Kringlebotn et al. teaches the optical directing device comprises an optical coupler (4) as shown in Figure 5 and as described in column 5, lines 52-67 and column 6, lines 1-10. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize couplers as taught by Kringlebotn et al. in the optical filter of Li in order to optically direct the signals in the filter device.

8. Claims 10, 35, 52 and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent 5,841,918 in view of Kewitsch et al. U.S. Patent 6,236,782.

Regarding claims 10, 35, and 63, Li teaches the invention as set forth above but does not teach that one of the first and second reflective elements is fully apodized and the other of the first and second reflective elements is partially apodized. Kewitsch et al. teaches that one of the first and second reflective elements is fully apodized and the other of the first and second reflective elements is partially apodized as described in column 10, lines 39-67 and column 11, lines 1-10. It would have been obvious to one having ordinary skill in the art at the time the invention was made to apodize the reflective elements of Li as taught by Kewitsch et al. in order to reduce grating sidelobes and eliminate adjacent channel crosstalk.

9. Claims 13, 14, 16-19, 22-27, 29, 30, 37, 39, 40, 42, 46, 49, 50, 51, 53, 54, 56, 65 and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent 5,841,918 in view of Fernald et al. U.S. Patent 6,229,827.

Regarding claims 13, 14, 16-19, 22-27, 29, 30, 37, 39, 40, 42, 46, 49, 50, 51, 53, 54, 56, 65 and 70, Li teaches the invention as set forth above and regarding claim 23 teaches that the first and second reflective elements include a respective Bragg grating as described in column 3, lines 14-18. Regarding claim 25, Li teaches that an optical directing device (12) is connected to the optical waveguides, the optical directing device directing the light to the first reflective element, directing the first wavelength band reflected from the first reflective element to the second reflective element as shown in

Figures 1, 3-6. Regarding claim 26, Li teaches that the optical directing device is an optical circulator as described in column 3, lines 14-16. Regarding claim 29, Li teaches that the shape of the first reflective filter function is different than the shape of the second reflective filter function as shown in Figures 2a-2c. Regarding claim 39 and 51, Li teaches that one of the first and second reflective filter functions comprises one of a Gaussian, rectangular and ramp shape as shown in Figures 2a-2c. Regarding claim 37, Li teaches (see Figure 1) a compression-tuned optical filter comprising: a first optical waveguide including a first reflective element (14) for receiving light and reflecting a first wavelength band of the light centered at a first reflection wavelength as described in column 3, lines 45-54; and a second optical element, optically connected to the first optical element to receive the reflected first wavelength band of the light, including a second reflective element (16) for reflecting a second wavelength band of the light centered at a second reflection wavelength, wherein the shape of the first filter function is different than the amplitude profile of the second filter function, and the first wavelength band and the second wavelength band overlap spectrally as shown in Figures 2a-2c and as described in column 4, lines 1-13. Regarding claim 42, Li teaches that the shape of the first reflective filter function is different than the shape of the second reflective filter function as shown in Figures 2a-2c. Regarding claim 49, Li teaches that both of the first and second optical waveguides is tuneable to change each of the respective first and second reflection wavelengths as described in column 3, lines 19-24. Regarding claim 50, Li teaches that the first and second reflection wavelengths are substantially aligned as described in column 4, lines 1-18. Regarding claim 54, Li

teaches that at least one of the first and second reflective elements includes a Bragg grating as described in column 3, lines 14-18. Regarding claim 70, Li teaches that the first wavelength band and the second wavelength band overlap spectrally as shown in Figures 2a-2c. Regarding claims 30 and 53, Li teaches that the first and second reflection wavelengths are offset by a predetermined spacing as shown in Figures 2a-2c.

However, Li does not teach that at least one of the first and second tunable optical elements have an outer cladding and an inner core disposed therein, wherein the first reflective element comprises a first grating disposed in a longitudinal direction of the inner core of the first optical element, and the second reflective element comprises a second grating disposed in a longitudinal direction of the inner core of the second tunable optical element nor that at least one of the first and second optical elements comprises: an optical fiber, having a reflective element written therein; and a tube, having the optical fiber and the reflective element encased therein along a longitudinal axis of the tube, the tube being fused to at least a portion of the fiber nor that at least one of the first and second optical elements has an outer transverse dimension of at least 0.3mm and comprises a substantially homogeneous material. Li does not disclose a compressing device for compressing simultaneously and axially the first and second tunable optical elements, wherein each of the first and second reflective elements are disposed along an axial direction of each respective first and second tunable element nor a straining device for tensioning axially the first optical element to tune the first

reflective element wherein the first reflective element is disposed along an axial direction of the first optical element.

Regarding claim 13, Fernald et al. teaches that (see Figure 1) at least one of the first and second optical elements comprises: an optical fiber (10), having a reflective element (12) written therein; and a tube (20), having the optical fiber and the reflective element encased therein along a longitudinal axis of the tube, the tube being fused to at least a portion of the fiber as described in column 4, lines 23-25.

Regarding claims 14, 24, 46 and 65, Fernald et al. also teaches that at least one of the first and second optical elements or waveguides has an outer transverse dimension of at least 0.3 mm as described in column 1, lines 60-61.

Regarding claim 22, Fernald et al teaches (see Figure 9, 10, 11) a tuneable optical waveguide, the optical waveguide comprising a first inner core with a first reflective element disposed therein, a second inner core having a second reflective element disposed therein as described in column 11, lines 46-55.

Regarding claims 16, 27 and 56, Fernald et al. also discloses a compressing device for compressing simultaneously and axially the first and second tunable optical elements, wherein each of the first and second reflective elements are disposed along an axial direction of each respective first and second tunable element as described in column 1, lines 57-67 and column 2, lines 1-3 and lines 42-44.

Regarding claim 17, Fernald et al teaches compressing devices for compressing axially the first and second optical elements as described in column 1, lines 57-67 and column 2, lines 1-4.

Regarding claim 18, Fernald et al. teaches a straining device for tensioning axially the first optical element to tune the first reflective element, wherein the first reflective element is disposed along an axial direction of the first optical element as disclosed in column 2, lines 1-3.

Regarding claim 19, Fernald et al teaches a heating element for varying the temperature of the first optical element to tune the first reflective element to reflect the selected first wavelength band as described in column 1, lines 41-49.

Regarding claim 25, Fernald et al teaches that an optical directing device optically connected to first and second inner cores as described in column 11, lines 46-55.

In regard to claim 37, Fernald et al. teaches that at least one of the first and second optical element has outer dimensions along perpendicular axial and transverse directions, the outer dimension being at least 0.3 mm along said transverse direction as described in column 1, lines 60-61, at least a portion of the respective first or second tunable element having a transverse cross-section which is contiguous and comprises a substantially homogeneous material as described in column 1, lines 65-67; and the respective first or second reflective element being axially strain compressed so as to change respective first or second reflection wavelength without buckling the respective first or second tunable element in the transverse direction as described in column 2, lines 1-3.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the compression tuned grating as taught by Fernald et al. in the optical system of Li in order to provide for precise tuning of the filter.

10. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent 5,841,918 in view of Putnam et al. U.S. Patent 6,310,990.

Regarding claims 20 and 21, Li teaches the invention as set forth above but does not further teach a first compressing device for axially compressing at least the first tunable optical element to tune the first reflective element, responsive to a displacement signal, wherein the first reflective element is disposed axially along the first tunable element; and a displacement sensor, responsive to the compression of the first tunable optical element, for providing the displacement signal indicative of the change in the displacement of the first tunable optical element or wherein the displacement sensor includes a capacitance sensor coupled to the first tunable optical element for measuring the change in the capacitance that depends on the change in the displacement of the first tunable optical element. Putnam et al. does teach (see Figure 2) a first compressing device (50) for axially compressing at least the first tunable optical element to tune the first reflective element, responsive to a displacement signal, wherein the first reflective element is disposed axially along the first tunable element as shown in Figure 1; and a displacement sensor (24), responsive to the compression of the first tunable optical element, for providing the displacement signal indicative of the change in the displacement of the first tunable optical element as described in column 5, lines 51-67 and column 6, lines 1-6 or wherein the displacement sensor includes a capacitance

sensor (72, 74) coupled to the first tunable optical element for measuring the change in the capacitance that depends on the change in the displacement of the first tunable optical element as described in column 6, lines 1-6. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the optical structure as taught by Putnam et al. in the optical filter system of Li in order to provide feedback control for the tuning of the optical filter.

11. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over are rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent 5,841,918 in view of Fernald et al. U.S. Patent 6,229,827 and further in view of Putnam.

In regard to claim 31, Li in view of Fernald et al teaches the invention as set forth above but does not teach a first compressing device for axially compressing at least the first tunable optical element to tune the first reflective element, responsive to a displacement signal, wherein the first reflective element is disposed axially along the first tunable element; and a displacement sensor, responsive to the compression of the first tunable optical element, for providing the displacement signal indicative of the change in the displacement of the first tunable optical element or wherein the displacement sensor includes a capacitance sensor coupled to the first tunable optical element for measuring the change in the capacitance that depends on the change in the displacement of the first tunable optical element. Putnam et al. does teach (see Figure 2) a first compressing device (50) for axially compressing at least the first tunable optical element to tune the first reflective element, responsive to a displacement signal, wherein the first reflective element is disposed axially along the first tunable element as

shown in Figure 1; and a displacement sensor (24), responsive to the compression of the first tunable optical element, for providing the displacement signal indicative of the change in the displacement of the first tunable optical element as described in column 5, lines 51-67 and column 6, lines 1-6 or wherein the displacement sensor includes a capacitance sensor (72, 74) coupled to the first tunable optical element for measuring the change in the capacitance that depends on the change in the displacement of the first tunable optical element as described in column 6, lines 1-6. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the optical structure as taught by Putnam et al. in the optical filter system of Li in order to provide feedback control for the tuning of the optical filter.

12. Claim 40 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent 5,841,918 in view of Fernald et al U.S. Patent 6,229,827 further in view of Kewitsch et al. U.S. Patent 6,236,782.

Regarding claims 40 and 52, Li in view of Fernald et al teaches the invention as set forth above but does not teach that one of the first and second reflective elements is fully apodized and the other of the first and second reflective elements is partially apodized. Kewitsch et al. teaches that one of the first and second reflective elements is fully apodized and the other of the first and second reflective elements is partially apodized as described in column 10, lines 39-67 and column 11, lines 1-10. It would have been obvious to one having ordinary skill in the art at the time the invention was made to apodize the reflective elements of Li as taught by Kewitsch et al. in order to reduce grating sidelobes and eliminate adjacent channel crosstalk.

Response to Arguments

13. Applicant's arguments filed 31 January 2003 have been fully considered but they are not persuasive.

The Applicant argues that the claimed invention provides an optical filter featuring two reflective elements having different grating profile shapes whereas the prior art, Li has a tuning element 18 with a reflection profile as shown in Figure 2a and a tuning element with a transmission profile shown in Figure 2b resulting in the filter function as shown in Figure 2c of Li and thus Li does not teach or suggest an optical filter featuring two reflective elements having different grating profile shapes. The Applicant further asserts that Figure 2a is the inverse of the transmission profile in Figure 2b and thus it would appear that the gratings have substantially similar reflection profiles.

In response to this argument, the Examiner would like to point out that both Figures 2a and 2b of Li represent **reflection** optical power R of each of the respective filters 14 and 16 as shown on the ordinate axis versus wavelength on the abscissa. This is further explained in column 3, lines 46-64 of Li and particularly lines 62-64 which state, "It is understood that the maximum transmission corresponds to minimum **reflection** on both graphs." Thus, it is apparent that Figure 2a (the reflection profile of optical filter 14) is not the inverse of Figure 2b (the reflection profile of optical filter 16) as asserted by the Applicant.

The Applicant further argues that in regard to claim 22 and the claims dependent thereon, Li does not teach or suggest an optical filter having an optical waveguide that includes a first and second reflective element as claimed or a dual core waveguide.

In response to this argument, the Examiner has re-formulated the obviousness rejection (Li in view of Fernald et al.).

The Applicant further argues that in regard to claim 58, and the claims dependent thereon, Li does not teach that the center wavelengths of the filter functions are substantially aligned.

In response to this argument, the Examiner notes that the applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references (i.e., the center wavelengths of the filter functions being substantially aligned).

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alessandro V. Amari whose telephone number is (703) 306-0533. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on (703) 308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

ava *avg*
May 28, 2003

MARK A. ROBINSON
PRIMARY EXAMINER